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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	YANG, LIZHANG		
Application No.:	10/687329	Group Art Unit:	2839
Filed:	October 16, 2003	Examiner:	Le, Thanh Tam T.
Title:	OPTICAL INTERCONNECT DEVICE		

BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents
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8-18-05 Melanie Gover

Date Signed by: Melanie G. Gover

Dear Sir:

This is an appeal from the Office Action mailed on March 30, 2005, in light of the Advisory Action mailed Jun 8, 2005, finally rejecting claims 1-4 and 6-15.

A Notice of Appeal in this application was mailed on July 5, 2005, and was received in the USPTO on July 5, 2005.

The fee required under 37 CFR § 41.20(b)(2) for filing an appeal brief should be charged to Deposit Account No. 13-3723.

Appellants request the opportunity for a personal appearance before the Board of Appeals to argue the issues of this appeal. The fee for the personal appearance will be timely paid upon receipt of the Examiner's Answer.

REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 1-4 and 6-15 are pending. Claims 1-4 and 6-15 stand rejected.

STATUS OF AMENDMENTS

Amendments filed after the final rejection have been entered by the Examiner.

SUMMARY OF CLAIMED SUBJECT MATTER

The claims at issue concern an optical interconnect device having a transition zone that functions to transition and to ribbonize a plurality of larger diameter fiber optic cables to a plurality of smaller diameter optical fibers.

Independent claim 1 provides an optical interconnect device comprising:

(a) a plurality of fiber optic cables, each cable having two ends and comprising at least one optical fiber surrounded by a protective jacket where the diameter of each fiber optic cable is larger than the diameter of its optical fiber and where the protective jackets of at least a first end of the fiber optic cables have been removed thereby exposing the optical fibers;

(b) a ribbonized assembly encasing a portion of the first ends of the fiber optic cables and the optical fibers, wherein the fiber optic cables occupy an input zone, the fibers occupy an output zone, the cables and fibers both occupy a transition zone in which the fibers are non-parallel, and the optical fibers in the output zone lie parallel to one another and have a first pitch; and

(c) a ferrule attached to the ribbonized assembly, the ferrule having a plurality of internal grooves having a second pitch,

wherein the first pitch of the optical fibers is substantially equal to the second pitch of the ferrule.

The subject matter of claim 1 is described in the specification, e.g., at p. 2, line 29 to p. 3, line 11 and p. 5, line 23 to p. 6, line 11 along with Figs. 1 and 3.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Sole Ground of Rejection

Claims 1-4 and 6-15, are rejected under 35 USC § 103(a) as purportedly being unpatentable over Bunin et al. (5,923,803) in view of Kingstone et al. (5,838,860).

ARGUMENT

Sole Ground of Rejection

Claims 1-4 and 6-15 are rejected under 35 USC § 103(a) as purportedly being unpatentable over Bunin et al. (5,923,803) in view of Kingstone et al. (5,838,860).

Applicants assert that the rejection of claims 1-4 and 6-15 under 35 USC § 103(a) should be reversed based on the following.

The Office Action states in part:

> Bunin et al., figure 4, disclose an optical interconnect device comprising:
> - a fiber optic cable (20) having two ends and comprising a plurality of optical fibers (22) each surrounded by a protective jacket where a diameter of the fiber optic cable is larger than a diameter of the each optical fiber and where the protective jacket of at least a first end of the each fiber optic cable has been removed thereby exposing the optical fiber;
> - a ribbonized assembly (31) encasing a portion of the first end of the fiber optic cable and the optical fibers, wherein the fiber optic cable occupies an input zone, the fiber occupies an output zone where the each optical fiber in the output zone lie parallel to one another and has a first pitch; and
> - a ferrule (50) attached to the ribbonized assembly, the ferrule having a plurality of internal grooves (54) having a second pitch;
> wherein the first pitch of the optical fiber is substantially equal to the second pitch of the ferrule.
>
> Bunin et al. disclose the instant claimed invention as described above except for the cable and the fiber both occupy a transition zone in which the fibers are non-parallel and a plurality of fiber optic cables.
>
> Kingstone et al., figure 7, disclose a fiber optic light source having a fiber optic cable (100) with a plurality of optical fibers (98) which having the cable and the fiber

both occupy a transition zone in which the fibers are non-parallel, It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Bunin et al. to have the cable, as taught by Kingstone et al., in order to provide uniform sideways lighting over the length of the cable, (Kingstone et al., column 1, lines 33-34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate Bunin et al's cable to have a plurality of fiber optic cables, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179, in order to reduce cost and easy assembly.

Applicants respectfully submit that according to MPEP 2142, to establish a case of prima facie obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references or generally known to one skilled in the art, to modify or combine reference teachings, 2) there must be reasonable expectation of success, and 3) prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co., 226 USPQ 438 (PTO Bd. App. 1984).*

Applicants respectfully submit that the references cannot support a case of *prima facie* obviousness as to the claims because, among other possible reasons, the cited references do not provide a motivation or suggest for inserting a transition zone in the device of Bunin because contrary to the statements in the Office Action, there would be no motivation to provide the connector device of Bunin with uniform sideways lighting over the length of the cable as taught by Kingstone. The Kingstone invention relates to a fiber optic lateral illumination system (*see* Kingstone Abstract) while the invention in Bunin relates to transmitting signals along an optical fiber (*see* Bunin at col. 1, lines 11-13). In addition, these references do not disclose all the elements of the present invention because they do not disclose a cable and fibers both occupying a transition zone in which the fibers are non-parallel. Although the Office Action does not identify the portion of the ferrule in Fig. 7 of Kingstone that is "the transition zone," Applicants believe the Examiner is referring to the tapered front portion 120 of central bore 118 of section 103. However, Fig. 7 clearly shows that fiber optic cable 100 terminates at the outer edge of section 103, and only fibers 98 extend into section 103. Accordingly, the fiber optic cable of Kingstone does not occupy an input zone, which precludes the possibility of the cable and fibers occupying a transition zone.

In the Advisory Action, under the Request for Reconsideration section, the Examiner states:

Since Bunin et al disclose the fiber optic cables occupy an input zone and an output zone, but do not disclose a transition zone, Kingstone et al, figure 7, disclose a transition zone. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Bunin et al. to have the transition zone, as taught by Kingstome et al., in order to provide uniform lighting over the length of the cable.

In response, Applicants reiterate their arguments above.

CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application. Please reverse the Examiner on all counts.

Respectfully submitted,

August 18, 2005
Date

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CLAIMS APPENDIX

1. (Previously presented) An optical interconnect device comprising:

(a) a plurality of fiber optic cables, each cable having two ends and comprising at least one optical fiber surrounded by a protective jacket where the diameter of each fiber optic cable is larger than the diameter of its optical fiber and where the protective jackets of at least a first end of the fiber optic cables have been removed thereby exposing the optical fibers;

(b) a ribbonized assembly encasing a portion of the first ends of the fiber optic cables and the optical fibers, wherein the fiber optic cables occupy an input zone, the fibers occupy an output zone, the cables and fibers both occupy a transition zone in which the fibers are non-parallel, and the optical fibers in the output zone lie parallel to one another and have a first pitch; and

(c) a ferrule attached to the ribbonized assembly, the ferrule having a plurality of internal grooves having a second pitch,

wherein the first pitch of the optical fibers is substantially equal to the second pitch of the ferrule.

2. (Original) The device of claim 1, wherein the optical fibers in the ribbonized assembly are touching or nearly touching one another.

3. (Original) The device of claim 1, wherein the ribbonized assembly is of a geometry that will not violate the minimum bend radius of the optical fiber.

4. (Previously presented) The device of claim 1 wherein at least one of the fiber optic cables is a tight buffer fiber cable or a ruggedized fiber cable.

5. (Cancelled)

6. (Original) The device of claim 1, wherein the ribbonized assembly comprises an ultraviolet light curable resin.

7. (Original) The device of claim 1, wherein the ribbonized assembly further comprises non-active fibers disposed adjacent to the optical fibers.

8. (Original) The device of claim 1, wherein the non-active fibers are of the same construction as the optical fibers.

9. (Original) The device of claim 8, wherein the non-active fibers are disposed between the optical fibers.

10. (Original) The device of claim 8, wherein the optical fibers are disposed between the non-active fibers.

11. (Previously presented) The device of claim 1, wherein the protective jacket on both ends of at least one fiber optic cable has been removed to expose the optical fibers.

12. (Original) The device of claim 11 wherein the ferrule is terminated to a MT connector.

13. (Currently Amended) The device of claim 12, wherein the second end of at least one of the fiber optic cables is terminated to an optical device.

14. (Original) The device of claim 13, wherein the optical device is selected from the group consisting of simplex fiber optic connector, duplex fiber optic connector, parallel fiber optic connector, MT connector, simplex fusion splint, parallel fusion splint, mechanical splice splint, simplex v-groove, furcation block, shuffle block, and combinations thereof.

15. (Original) The device of claim 1, wherein the ribbonized assembly is straight or curved.